

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: LESICAR PERRIN 49 Wright Street ADELAIDE SA 5000		PCT WRITTEN OPINION (PCT Rule 66)	
		Date of mailing (day/month/year) - 7 MAY 2004	
Applicant's or agent's file reference 11529/pct		REPLY DUE within TWO MONTHS from the above date of mailing.	
International Application No PCT/AU2003/001132	International Filing Date (day/month/year) 3 September 2003	Priority Date (day/month/year) 25 October 2002	
International Patent Classification (IPC) or both national classification and IPC Int. CL ⁷ A62B 1/10			
Applicant LEE, Terry, Victor			

- 1 This written opinion is the first drawn by this International Preliminary Examining Authority.
- 2 This opinion contains indications relating to the following items:

I	<input checked="" type="checkbox"/>	Basis of the opinion
II	<input type="checkbox"/>	Priority
III	<input type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	<input type="checkbox"/>	Lack of unity of invention
V	<input checked="" type="checkbox"/>	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	<input type="checkbox"/>	Certain documents cited
VII	<input type="checkbox"/>	Certain defects in the international application
VIII	<input checked="" type="checkbox"/>	Certain observations on the international application
3. The FINAL DATE by which the international preliminary examination report must be established according to Rule 69.2 is:
25 February 2005
4. The applicant is hereby invited to reply to this opinion.

When?	See the Reply Due date indicated above. However, the Australian Patent Office will not establish the Report before the earlier of (i) a response being filed, or (ii) one month before the Final Date by which the international preliminary examination report must be established. The Report will take into account any response (including amendments) filed before the Report is established. If no response is filed by 1 month before the Final Date, the international preliminary examination report will be established on the basis of this opinion. Applicants wishing to have the benefit of a further opinion (if needed) before the report is established should ensure that a response is filed at least 3 months before the Final Date by which the international preliminary examination report must be established.
How?	By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.
Also	For an additional opportunity to submit amendments, see Rule 66.4. For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis. For an informal communication with the examiner, see Rule 66.6.

Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No (02) 6285 3929	Authorized Officer ZBIGNIEW BIELAWSKI Telephone No. (02) 6283 2218
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1. Basis of the opinion

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description, pages . as originally filed,
pages . filed with the demand,
pages . received on with the letter of
- ☐ the claims, pages . as originally filed,
pages . as amended under Article 19,
pages . filed with the demand,
pages . received on with the letter of
- ☐ the drawings, pages . as originally filed,
pages . filed with the demand,
pages . received on with the letter of
- ☐ the sequence listing part of the description
pages . as originally filed
pages . filed with the demand
pages . received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c))

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 5, 10-12, 14-15	YES
	Claims 1-4, 6-9, 13	NO
Inventive step (IS)	Claims	YES
	Claims 1-15	NO
Industrial applicability (IA)	Claims 1-15	YES
	Claims	NO

2. Citations and explanations

Novelty (N) Claims 1-4, 6-9, 13

The invention defined in claims 1-4, 6-9 is not novel when compared with prior art document US 4623038 A that discloses all the essential features of the invention claimed.

Wherein the invention is disclosed as follow:

- | | |
|---|---|
| • an escape device | escape device 10 (fig. 1-3) |
| • a rotatable cable dispensing device including a cable | a drum 14 including a cable 16 (fig. 3) |
| • a braking mechanism | a secondary brake mechanism 34 (fig. 3-6) |
| • an outer housing | housing 11 (fig. 3) |
| • cooling leaf members | cooling element <u>57 (fig. 1)</u> |
| • cable guides | channel member 17 (fig. 2) |

Similarly the remaining documents cited in the International Search Report render the claimed invention not novel as follow:

The invention defined in claims 1-2, 4-5, 13 is not novel when compared with prior art document US 4722422 A.

The invention defined in claims 1-2, 4, 6, 9, 13 is not novel when compared with prior art document GB 2306107 A (see figures 5-6).

The invention defined in claims 1-2, 4, 6, 8-9, 13 is not novel when compared with prior art document FR 2278354 A.

The invention defined in claims 1-2, 4, 6, 9, is not novel when compared with prior art document DE 2528410 A1.

The invention defined in claims 1-2, 4, 6, 9, 13 is not novel when compared with prior art document SU 1243740 A1.

(Continued on supplemental sheet)

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Claim 11 is not clear because it is not apparent whether "the planetary gear arrangement" (line 1) and "a planetary gear mechanism" (claim 10, lines 3-4) is intended to be the same as, or different from, each other. I cannot therefore understand the scope of the monopoly being claimed. It is noted that in patent claims, different words are taken to be defining different things, however the context suggests that a single thing may be being referred to.
2. Claim 11 is not clear because it appears that it should have been appended to claim 10 instead of 9 as the "planetary gear" referred to in the claim is first defined in claim 10.
3. Claim 12 is not clear because it appears that it should have been appended to claim 11 instead of 9 as the "spinner gear" referred to in the claim is first defined in claim 11.

Furthermore the claim does not read clearly over line 4.
4. Claim 14 is not clear regarding "a launch arm" because one has already been defined in claim 13.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V**Inventive Step (IS) Claims 1-15**

Claims 1-4, 6-9, and 13 are considered not novel; therefore also not involving an inventive step.

Furthermore, the features added by appended claims 9-11 are either disclosed in the cited documents and when the teaching of those documents is combined as it would have been obvious to the person skilled in the art render the invention not inventive or relate only to conventional manufacturing techniques typically used to make devices of this type and therefore they cannot be considered as contributing to patentable ingenuity.

Our Reference 11529PCT ep y dl

18 October 2004

Commissioner of Patents
WODEN ACT 2606

Sir

Patent Cooperation Treaty Application No. PCT/AU03/01132
Escaping Device
Terry Victor Lee

We refer to the Written Opinion of the Authorised Officer issued with respect to the abovementioned application and dated 7th May 2004.

In response to the Examiner's objections we have now amended the claims of the application to clearly distinguish the present invention from the prior art. Corresponding amendments are also made to the description. We enclose herewith amended claims together with a marked up copy.

With respect to the Examiner's observations on the clarity of the claims, we have amended claims 10, 11 and 13 [previously claims 11, 12 and 14] accordingly.

The Examiner has cited several prior art documents that they believe disclose all the essential features in the invention claimed. We will deal with each of the cited documents presently, however, there are some comments we wish to make that are relevant to all of the cited prior art documents.

One of the key features of the present invention is the configuration of the brake apparatus. As clearly stated at page 10, line 2, the trailing edge of the brake pad *"is biased against the inner surface of the brake drum 28 when there is no rotation of the brake spinner frame 76"*. Because the trailing edge (90) of the brake pad (84) is in contact with the brake drum (28) there is a small amount of braking force at all times, even when the escape device is initialised and the speed of descent is very slow. Consequently, as the speed of rotation of the brake spinner frame (76) increases, the brake pads (84) are progressively forced against the brake drum (28) thereby slowing the speed of rotation of the brake spinner frame (76) and consequently the speed at which the cable is fed out from the escape device.

Therefore, there is no requirement for the brake spinner frame (76) to reach a minimum speed before the braking mechanism is engaged. The particular

configuration of the present invention avoids the use of an on/off brake mechanism. Such on/off brake mechanisms can cause jarring in use, which could potentially cause failure of the braking mechanism or breakage of the cable.

US 4,623,038 ("*Stancato*")

The invention described in *Stancato* includes a first and a second braking mechanism. Both of the braking mechanisms are activated by levers, upon which force must be applied to engage the braking mechanisms. As clearly stated in the description, "*frictional contact for braking purposes of the first brake mechanism 25*" does not occur "*until lever 31 is manually activated*" (paragraph 5, line 68 - paragraph 6, line 2). *Stancato* further states that "*actuation of actuation lever 41...thus engage(es) secondary brake mechanism 34*" (paragraph 6, lines 63, 67-68).

Consequently, the engagement of a braking mechanism would cause jolting which would endanger the integrity of the braking mechanisms and potentially cause the cable to snap. In contrast, the invention of the present application discloses a brake mechanism whereby the trailing edge of the brake pad (90) is in constant contact with the brake drum (28).

Furthermore, the speed at which the user descends when using an escape device as disclosed in the present application, is automatically reduced without the user having to activate any mechanisms, as is the case with the actuation levers (31 & 34) of *Stancato*. This is particularly important, since if the user loses consciousness during decent the escape device as disclosed in the present application will slow their decent without requiring direct input from the user.

US 4,722,422 ("*Hiraoka*")

The invention disclosed in *Hiraoka* comprises an emergency escape apparatus with a braking device that utilises either the viscosity characteristics of oil (column 2, line 27) or the effects of centrifugal force (paragraph 2, line 62) to reduce the rotational speed of the reel (4) and consequently the speed at which the wire is dispensed from the apparatus. The invention disclosed by *Hiraoka* does not include any type of ventilation system. In fact, from studying the drawings the opposite seems to be true with the invention appearing to be a fully enclosed unit (Figures 1 & 4), as would be required if oil was being used in the braking mechanism.

The gear mechanism disclosed in *Hiraoka* is substantially different to that which is disclosed with the present invention. *Hiraoka* describes a pinion (20) which engages the gear (18) of reel (4) as illustrated in Figure 2. The use of a

construction of the devices may be such that they would conceivably be very bulky if constructed for use in higher buildings, or the heat generated during their use would make them impractical. For this reason existing portable escape and descent devices are perhaps providing illusory reassurance to their owners.

- 5 It is to this situation that the present invention is addressed. A portable escape device is provided that allows the user to travel many floor levels

SUMMARY OF THE INVENTION

Therefore, according to a first aspect of the invention there is provided an escape device characterized in that it includes:

- 10 - a cable;
- a rotatable cable dispensing assembly from which said cable is dispensed under load,
- a braking mechanism operatively connected to said rotatable cable dispensing assembly, wherein at least some braking force is applied when said escape device is at rest;
15 - whereby a braking response of the braking mechanism is proportional to the rate at which cable is dispensed from the rotatable cable dispensing assembly.

By producing a braking effect responsive to the speed of the device it is possible to have a regulated a smoother descent.

- 20 Preferably, the cable dispensing assembly and the braking mechanism are located in an outer housing.

Usefully, a housing will also include cooling leaf members adapted to allow air flow there through to thereby dissipate any heat generated by the device. It can be appreciated that during descent the device may generate heat. A self cooling operation is preferable.

- 25 It is also preferable if the housing incorporates guides to locate the position of cable dispensed from the device.

Conveniently, the device includes a back plate mounted thereto said back plate adapted to be strapped to a back of a person to thereby secure said person to said device. A simple harness makes the device easy to carry and deploy.

Preferably, the braking mechanism is operatively connected to said cable dispensing assembly through an output shaft driven by the cable dispensing assembly and wherein said braking mechanism is a centrifugal braking mechanism in which a brake spinner frame having one or more braking elements attached thereto is connected to the output shaft and is rotated in response to rotation of the output shaft

Preferably, the braking frame includes one or more braking elements pivotally mounted thereto, said braking elements pivoting under the influence of centrifugal force as the output shaft rotates to thereby bring the braking elements progressively into contact with a braking surface.

10 The braking mechanism may be operatively connected to said cable dispensing assembly through a geared arrangement. The use of a geared arrangement allows the device to have a more responsive braking system.

The device of the invention therefore uses the forces acting on the cable as it is paid out from the device to drive the gearing arrangement. The gearing arrangement then serves to accelerate to the speed of rotation such that the output from the gearing is then able to produce a substantial braking effect.

Preferably, the rotatable dispensing assembly includes a reel from which said cable is dispensed has an innermost surface serving as a ring gear of a planetary gear arrangement and the ring gear operates through a gear drives output shaft, said output shaft serving to operate said braking mechanism. The planetary gear arrangement consists of three outermost planetary gears carried on a stationary gear frame are arranged around a central spinner gear and wherein the spinner gear independently engages all three planetary gears, whereby each planetary gear engages ring gear such that dispensing of cable drives the ring gear which, in turn drives the planetary gears and thus the spinner gear.

Preferably, the spinner gear is secured for rotation on a spinner gear shaft, and whereby the spinner gear shaft is also connected to the braking mechanism such that a speed of rotation of the spinner gear and thereby the is proportional to a speed of rotation of the ring and thus the a braking response of the braking mechanism is proportional to the rate at which cable is dispensed from the cable dispensing assembly.

Preferably, the cable is adapted to be connected at a free end thereof to a launch arm attached to a building. A launch arm may consist of a channel member having a track therein adapted to hold a runner attached to a free end of the cable. By attaching the device to a building in this way the user is able to position themselves clear on any
5 obstructions on the descent.

Preferably, the launch arm is movable between a retracted position in which the channel is inoperative an extended condition in which the launch arm is available for use a safety flap serving to restrict access to said channel in the retracted position and said safety flap being released as said channel is moved to an extended position.

10 DESCRIPTION OF DRAWINGS

The above and other objects, features, and advantages of the present invention will be apparent from the following detailed description of a preferred embodiment in conjunction with the accompanying drawings. In the drawings:

Figure 1 illustrates an escape device in accordance with the present invention;

15 Figure 2 illustrates a perspective view of the escape device of figure 1;

Figure 3 shows a rear view of the full assembly of the device of figure 1;

Figure 4 illustrates an cross sectional side view of the assembly of figure 1;

Figure 5 shows a rear face view of a back plate used in the assembly of the device of figure 1;

20 Figure 6 shows a side view of a back plate used in the assembly of the device of figure 1;

Figure 7 shows a perspective view of a back plate used in the assembly of the device of figure 1;

Figure 8 illustrates a view of a main assembly of the device;

25 Figure 9 shows the main assembly in exploded view;

Figure 10 shows the brake drum of the main assembly in various views;

Figure 11 shows the main frame of the main assembly in perspective view;

CLAIMS

1. An escape device characterized in that it includes:
 - a cable;
 - a rotatable cable dispensing assembly from which said cable is dispensed under
5 load,
 - a braking mechanism operatively connected to said rotatable cable dispensing
assembly, wherein at least some braking force is applied when said escape device
is at rest;
 - whereby a braking response of the braking mechanism is proportional to the rate
10 at which cable is dispensed from the rotatable cable dispensing assembly.
2. An escape device according to claim 1, characterized in that said device includes
an outer housing having said cable dispensing assembly and said braking
mechanism located therein.
3. An escape device according to claim 1 or claim 2, characterized in that said device
15 includes an outer housing and wherein said housing includes cooling leaf members
adapted to allow air flow there through to thereby dissipate any heat generated by
said device.
4. An escape device according to any one the preceding claims, characterized in that
20 said device includes an outer housing having guides to locate the position of cable
dispensed from said device.
5. An escape device according to any one of the preceding claims characterized in
that said device includes a back plate mounted thereto said back plate adapted to
be strapped to a back of a person to thereby secure said person to said device.
6. An escape device according to any one the preceding claims, characterized in that
25 the braking mechanism is operatively connected to said cable dispensing assembly
through an output shaft driven by the cable dispensing assembly and wherein said
braking mechanism is a centrifugal braking mechanism in which a brake spinner
frame having one or more braking elements attached thereto is connected to the
output shaft and is rotated in response to rotation of the output shaft

7. An escape device according to claim 6, characterized in that said braking frame includes one or more braking elements pivotally mounted thereto, said braking elements pivoting under the influence of centrifugal force as the output shaft rotates to thereby bring the braking elements progressively into contact with a braking surface.
8. An escape device according to anyone of the preceding claims, characterized in that said braking mechanism is operatively connected to said cable dispensing assembly through a geared arrangement.
9. An escape device according to anyone of the preceding claims, characterized in that said rotatable dispensing assembly includes a reel from which said cable is dispensed, said reel having an innermost surface serving as a ring gear of a planetary gear arrangement and wherein said ring gear operates through a gear drives an output shaft, said output shaft serving to operate said braking mechanism.
10. A device according to claim 9, characterized in that said planetary gear arrangement consists of three outermost planetary gears carried on a stationary gear frame are arranged around a central spinner gear and wherein the spinner gear independently engages all three planetary gears, whereby each planetary gear engages ring gear such that dispensing of cable drives the ring gear which, in turn drives the planetary gears and thus the spinner gear.
11. A device according to claim 10, characterized in that said spinner gear is secured for rotation on a spinner gear shaft, and whereby the spinner gear shaft is also connected to the braking mechanism such that a speed of rotation of the spinner gear and thereby the speed of rotation of the planetary gears is proportional to a speed of rotation of the ring and thus the braking response of the braking mechanism is proportional to the rate at which cable is dispensed from the cable dispensing assembly.
12. An escape device according to any one of the preceding claims, characterized in that said cable is adapted to be connected at a free end thereof to a launch arm attached to a building.
13. An escape device according to claim 12, characterized in that said launch arm consists of a channel member having a track therein adapted to hold a runner attached to a free end of the cable.

14. An escape device according to claim 13, characterized in that said launch arm is movable between a retracted position in which the channel is inoperative and an extended condition in which the launch arm is available for use a safety flap serving to restrict access to said channel in the retracted position and said safety flap being released as said channel is moved to an extended position.
- 5

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